UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 56507

MSAS NO. 121

OVER THE

OTTER TAIL RIVER

DISTRICT 4 - OTTER TAIL COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 62)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 56507, Piers 1 and 2, were found to be in good condition with no defects of structural significance, although extensive coating failure with minor surface corrosion was present on the pipe piles of the piers. The channel bottom around the substructure units was well established and appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) Approximately 50 percent of the total submerged surface area of the steel pipe piles of both piers exhibited 100 percent coating failure and minor surface corrosion.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 56507

Feature Crossed: The Otter Tail River

Feature Carried: MSAS No. 121

Location: District 4 - Otter Tail County

Bridge Description: The superstructure consists of a three span multiple prestressed concrete girder structure supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments founded on cast-in-place concrete piles and two pier bents with concrete filled steel pipe piles. The piers are numbered 1 and 2, starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: October 30, 2002

Weather Conditions: Sunny, "25EF

Underwater Visibility: "5 feet

Waterway Velocity: "1 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers each consist of seven concrete filled steel pipe piles arranged in a single line, which support a rectangular reinforced concrete pile cap.

Maximum Water Depth at Substructure Inspected: Approximately 7.2 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pile cap on the east end of Pier 2.

Water Surface: The waterline was approximately 5.1 feet below reference.
Waterline Elevation = 1180.9.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

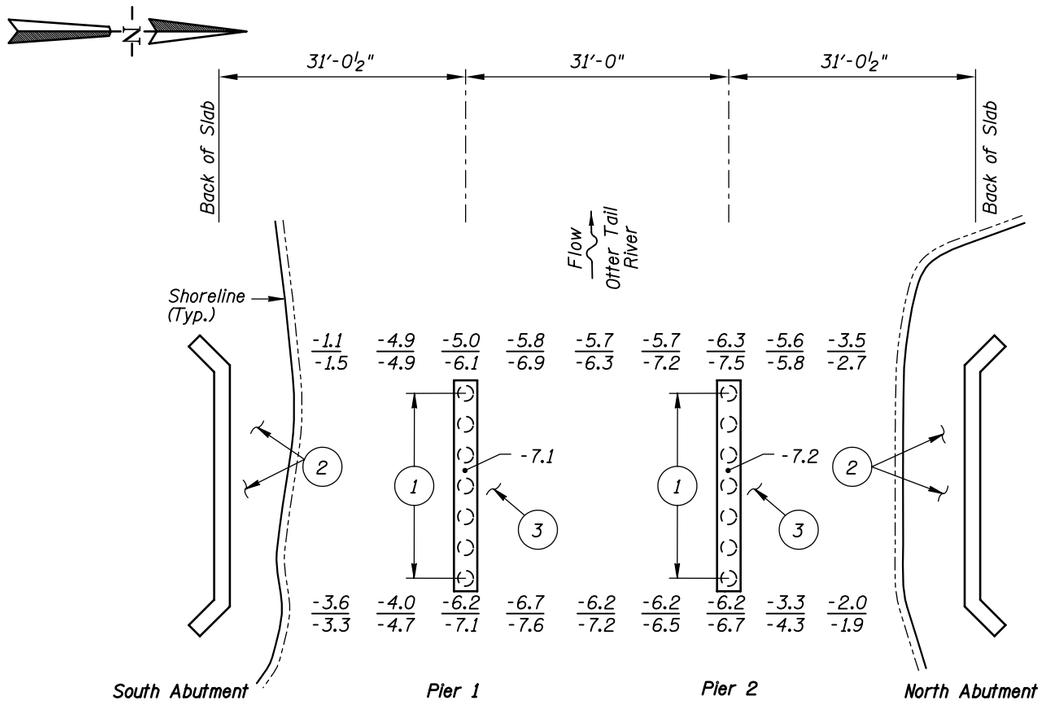
Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/10/02

Item 113: Scour Critical Bridges: Code I/95

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____Yes ___X__ No



SOUNDING PLAN

TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 30, 2002, the waterline was located approximately 5.1 feet below the top of the pile cap at the upstream end of Pier 2. This corresponds with a waterline elevation of 1180.9 based on the previous report dated September 4, 1997.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

(1) Overall, approximately 50 percent of the total submerged surface area of the steel pipe piles surfaces exhibited 100 percent coating failure and minor surface corrosion.

(2) 1 to 3 foot diameter riprap armored both shorelines.

(3) The channel bottom material consisted of gravel, sand, and random riprap with a probe rod penetration of 6 inches.

Legend

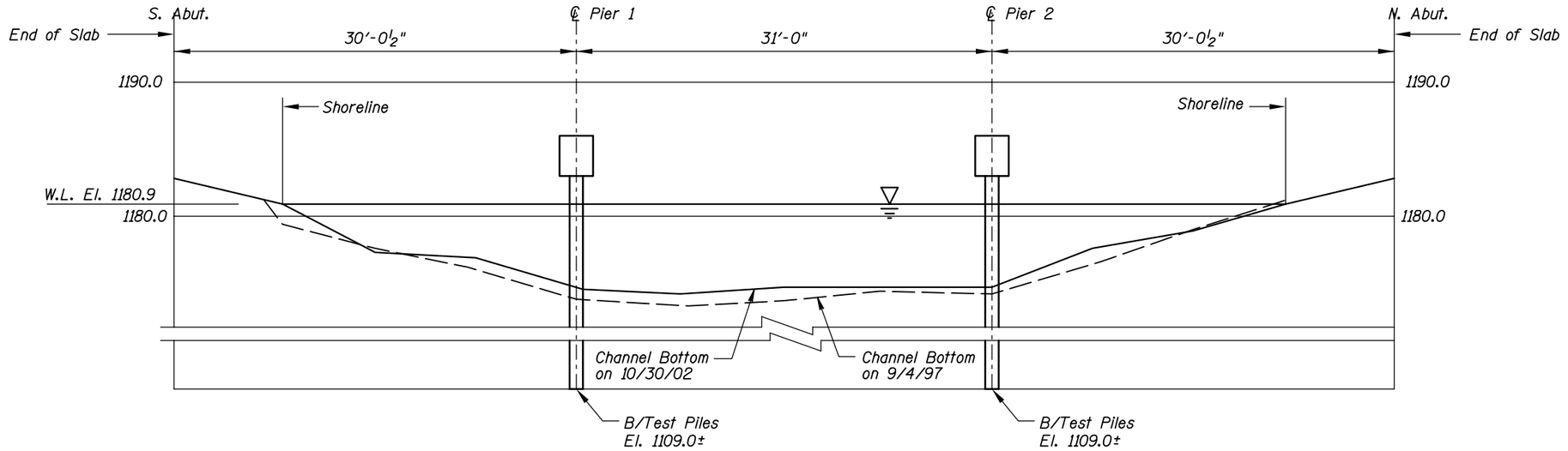
-2.0	Sounding Depth from Waterline (10/30/02)
-5.2	Sounding Depth from Waterline (9/4/97)
( )	Concrete Filled Steel Pipe Pile

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

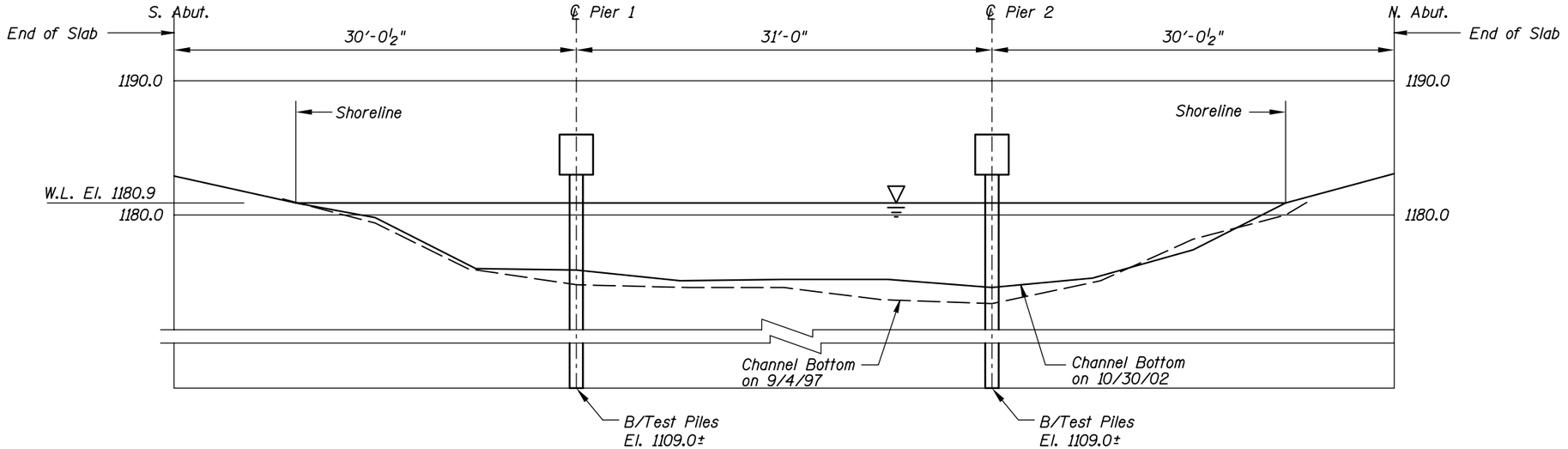
STRUCTURE NO. 56507
OVER THE OTTER TAIL RIVER
DISTRICT 4, OTTER TAIL COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: OCT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120062		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

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OVER THE OTTER TAIL RIVER
DISTRICT 4, OTTER TAIL COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	**COLLINS ENGINEERS, INC.**	Date: OCT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=10'
Code: 35120062		Figure No.: 2

Photograph 1. Overall View of Structure, Looking West.

Photograph 2. View of Pier 1, Looking Southwest.

Photograph 3. View of Pier 2, Looking Southeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 30, 2002

ON-SITE TEAM LEADER: Shirley M. Walker, P.E.

BRIDGE NO: 56507 WEATHER: Sunny, "25EF

WATERWAY CROSSED: The Otter Tail River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR

OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins

EQUIPMENT: Scuba, Probe Rod, Lead Line, Sounding Pole, U/W Light, Scraper, Camera

TIME IN WATER: 8:10 a.m.

TIME OUT OF WATER: 8:20 a.m.

WATERWAY DATA: VELOCITY "1 f.p.s.

VISIBILITY "5 feet

DEPTH 7.2 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the steel pipe piles were in good condition with no defects of structural significance observed. Approximately 50 percent of the total submerged surface area of the piles exhibited total coating failure and minor surface corrosion with no appreciable section loss. The channel bottom appeared stable with no appreciable changes since the previous inspection.

FURTHER ACTION NEEDED: _____ YES ____X___ NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 56507
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Otter Tail River

INSPECTION DATE October 30, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	7.1’	7	N	N	9	N	7	8	8	8	N	8	N	7	N	N	N	N
	Pier 2	7.2’	7	N	N	9	N	7	8	8	8	N	8	N	7	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the steel pipe piles were in good condition with no defects of structural significance observed. Approximately 50 percent of the total submerged surface area of the piles exhibited total coating failure and minor surface corrosion with no appreciable loss of section. The channel bottom appeared stable with no appreciable changes since the previous inspection.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.